Environmental Operations, Inc.
CLEARING THE WAY

March 9, 2017

Mr. Bruce Morrison
Project Manager
U.S. Environmental Protection Agency, Region 7
11201 Renner Boulevard
Lenexa, KS 66219

RE: Response to CMS Review Comments Letter
Solutia – John F. Queeny Plant
St. Louis, Missouri
EPA ID No. MOD 004 954 111

RCRA
560513

Dear Mr. Morrison:

This communication is meant to be a synopsis of the conference call held on February 28, 2017. Participants included Bruce Morrison with EPA, Chris Kump-Mitchell with MDNR, and Eric Page, Larry Rosen, and Robin Rodriguez of EOI. The purpose of the call was to discuss the EPA comment letter of February 14, 2017 on the CMS Report dated July 31, 2017. For context, the specific comment is shown in italics, and discussion on the comment follows.

1. *Section 3.7, Remediation Goals, uses the target cancer risks of $1E^{-6}$, $1E^{-5}$ $1E^{-4}$ and non-cancer hazard quotient of 1 to back calculate remediation goals for groundwater. These values are included in Table 3-15. It is unclear which set of values will be used as remediation goals.*

This comment was seeking clarification. Robin explained that remediation goals (RGs) were calculated for each receptor shown to have cumulative cancer risks greater than 1E-04 or a noncancer hazard index greater than 1.0. When these cumulative risks were exceeded, remediation goals were developed for any individual chemical demonstrating a cancer risk greater than 1E-05, or a noncancer hazard quotient greater than 1.0. Such chemicals are now termed chemicals of concern (COCs), or risk drivers, as they are the chemicals which are moved forward to the CMS phase to evaluate alternatives for clean-up. In order to evaluate clean-up strategies, a clean-up level must be established; hence the need to calculate RGs for the COCs. Table 3-15 shows the results of the remediation goal calculations for industrial workers and construction workers. For some chemicals, there are two RGs calculated, one based on carcinogenic effects and the other based on noncarcinogenic effects. For clarification, when two such RGs are available, the lesser of the two will be selected as the RG to move forward to the CMS, as it is more protective.

2. *Section 5 needs to identify and evaluate monitored natural attenuation as an alternative for the FF Building Area, the Acetanilides Production Area, and the Former Bulk Chemical Storage Area. MNA should be identified as a component of the proposed final remedy for each of these areas and should be evaluated against the primary and secondary screening criteria.*

MNA can be added as a component of the category entitled institutional controls.

3. *MNA parameters were previously measured as part of the interim measures and injection activities.*
At that time, it was demonstrated that MNA was occurring. MNA parameters should be included as part of the groundwater monitoring program to verify that MNA processes are still active and continue to reduce groundwater concentrations. A decision matrix should be developed using mass balance and/or statistical evaluations to determine if the groundwater concentrations are decreasing, stable, or increasing. A contingency plan should also be developed and implemented should it be determined the MNA processes are no longer active or statistical evaluation determines that the groundwater concentrations are increasing.

MNA can be included as part of groundwater monitoring. Note that a new groundwater monitoring plan would be developed upon acceptance.

4. *It would be beneficial to break out the MNA costs for each area of concern, as this may assist in the potential sale of separate parcels of the site in the future. Table 4-1 should include MNA. There should be a Table 4.3 that screens technologies for the FBCSA.*

The inclusion of MNA costs is not relevant to the potential sale of parcels; however, it can be included. EOI understood that the two remedial technologies to be evaluated, SVE/Sparge and thermal, were to be evaluated for the FF Area and the APA. We can expand this to include the FBCSA.

5. *Section 6, Justification and Recommendations, Former FF Building Area states that the cumulative estimated lifetime cancer risk for an industrial worker did not exceed the EPA recommended risk range of $1F^{6}$ to $1E^{-4}$. According to page 13, Section 3.5.1 and Table 3-10 the ELCR for an industrial worker is $2.1F^{3}$ which exceeds the recommended risk range of $1F^{6}$ to $1E^{-4}$. There should also be a Section 6.4 which includes justification and recommendations for the FBCSA.*

The text of Section 6 will be revised to comport with the risk results presented in Section 3.5.1. Also, an additional section will be added, as Section 6.4, to address the FBCSA.

6. *The human health risk assessment evaluated both cancer and non-cancer risks for inhalation of VOCs in indoor air for an industrial worker and inhalation of VOCs during trenching, and construction activities for a construction worker in the FF Building Area, the FBCSA and the APA. The HHRA results indicate the potential for increased cancer and non-cancer risks due to volatilization to indoor air to an industrial worker and non-cancer risks to a construction worker in the FF Building Area; increased non-cancer risks to an industrial and construction worker in the former APA; and increased cancer and non-cancer risks to an industrial and construction worker in the FBCSA.*

   The agencies are concerned that the proposed remedy of institutional controls and MNA alone will not be sufficient to prevent unacceptable human exposures due to potential migration of vapors into future buildings that may be constructed on the property. In addition, recent sampling has verified that vapors are present below existing buildings. While vapor mitigation systems and institutional controls can protect building occupants from vapor intrusion, they don't eliminate the source of the vapor intrusion. The EPA Office of Solid Waste and Emergency Response (OWSER) Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air (June 2015) states that mitigation of vapor intrusion is generally not a substitute for remediation of subsurface vapor sources. Therefore, the agencies cannot agree with the proposed remedy for the FF Building Area. Additional source removal or treatment at the FF Building Area is necessary to further reduce COC concentrations in fill and silty clay groundwater unit to mitigate potentially unacceptable vapor intrusion into future buildings and the off-site migration of contaminated groundwater.

   The CMS should provide specific examples of the types of vapor intrusion prevention that will be installed on future buildings in the FF Building Area, the APA, and the FBCSA including an air sampling protocol to monitor for vapor intrusion in future buildings. Annual verification and monitoring demonstrating that the vapor mitigation systems are effectively preventing vapor intrusion shall be incorporated as part of the remedy. In addition to specification in the CMS, this requirement will be included in the enforceable Environmental Covenant as part of the proposed final remedy.

   EOI disagrees that additional source removal or treatment is necessary. Mitigation of risk is the goal that we understood as a result of our March 2016 meeting, with vapor intrusion as one of the concerns. There would be no cost benefit for additional remediation, only a delay in re-purposing the property to productive use. Absent development that includes occupied buildings in a specific area with the potential for vapor intrusion, there is no risk. We note that the guidance acknowledges that elimination of the vapor intrusion pathway is rendered by engineered controls, and that it is recognized as both effective and cost efficient. The addition of institutional controls provides a further layer of protection to ensure the system is installed, operated, maintained and monitored. If development includes a building over an area,

and vapor intrusion potential is demonstrated, then construction will require a vapor mitigation system. We can provide language that discusses examples of mitigation systems; however, the design of any system will be specific to the location and structure. We can include language in the CMS regarding annual vapor mitigation monitoring to establish effectiveness, and include language for enforceable environmental covenants.

7. *A portion of the proposed remedy incorporates activity and use limitations for the site. The activity and use limitations will be included in the enforceable Environmental Covenant as part of the proposed final remedy. Activity and use limitations will include no residential use, no groundwater use, soil restrictions, construction restrictions and requirements to prevent vapor intrusion. Portions of the property are proposed for redevelopment and may require disturbance of onsite soil. The agencies recommend that a Soil Management Plan be developed as part of the proposed remedy. The Soil Management Plan shall outline procedures for proper management, sampling and disposal of contaminated soil encountered during on-site construction activities. The Soil Management Plan shall also include relevant worker training, safety protocols, and identification of personal protective equipment for construction personnel conducting such work.*

We agree that a Soil Management Plan (SMP) will be part of the remedy. We can include language in the CMS that specifies the need for a SMP, and outline, as above, pertinent components. We think preparation of an SMP follows the acceptance of the HHRA and CMS, and is a separately reviewed and approved document. Similarly, this applies to the enforceable Environmental Covenant. We can augment language in the CMS regarding elements of the Environmental Covenant.

If there are questions or concerns related to this Progress Report, please contact Larry Rosen, who can be reached by phone at (314) 480-4694, or via email at larryr@environmentalops.com.

Respectfully submitted,
ENVIRONMENTAL OPERATIONS, INC.

Lawrence C. Rosen

Lawrence C. Rosen, R.G.
Senior Project Manager

Copy: Mr. Michael House/Solutia
Ms. Christine Kump-Mitchell/MDNR
Mr. Rich Nussbaum/ MDNR